

Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In an automated, computer-controlled instrument for assaying samples contained within a plurality of a reaction receptacles and including modules for performing multiple assay steps, a receptacle transport mechanism adapted to transport reaction receptacles between the modules of the instrument, and a computer controller for controlling operation of the modules and the receptacle transport mechanism, an ~~An~~ incubator for receiving a plurality of reaction receptacles containing reaction fluids and for maintaining the reaction fluids in a temperature controlled environment, said incubator comprising:

a housing including a receptacle access opening formed therein for allowing ~~movement of the receptacle transport mechanism to move~~ a reaction receptacle into or out of said housing through said receptacle access opening;

a ~~command-responsive~~ closure mechanism connected to said housing in proximal relation to said receptacle access opening, said ~~command-responsive~~ closure mechanism including a door operatively positioned with respect to said receptacle access opening and movable between a closed position in which said door cooperates with said housing to substantially close off said receptacle access opening and an open position in which said door is positioned such that said receptacle access opening is sufficiently unblocked, thereby permitting so as to permit a reaction receptacle to pass therethrough, said closure mechanism being responsive to commands from said computer controller to move said door being movable between said closed position and said open position in response to corresponding closure movement commands from said computer controller to prevent or permit access to said housing through said receptacle access opening, wherein movement of said door by said closure mechanism is synchronized to movement of the receptacle transport mechanism by the computer controller so that said closure mechanism is commanded by the computer controller to move said door to said open position when the receptacle transport mechanism is commanded by the computer controller to move into a position

in which the receptacle transport mechanism is able place a reaction receptacle into or remove a reaction receptacle from said housing through said receptacle access opening;

said housing and said ~~command-responsive~~ closure mechanism constituting an enclosure defining an incubation chamber therein;

a heat source in thermal communication with said incubation chamber;

sensors operatively associated with said closure mechanism and constructed and arranged to indicate ~~that~~ whether said door is in said closed position or in said open position; and

a receptacle carrier disposed within said incubation chamber and including a plurality of receptacle stations, each of said receptacle stations being constructed and arranged to carry a single reaction receptacle, said receptacle carrier being constructed and arranged to present any of said plurality of receptacle stations in a receptacle transfer position with respect to said receptacle access opening.

2. (Currently Amended) The incubator of claim 1, further comprising a receptacle mixing mechanism mounted on said housing and constructed and arranged to agitate a reaction receptacle carried in [[a]] one of said receptacle stations disposed in an operative position with respect to said mixing mechanism to thereby mix a reaction fluid contained in the reaction receptacle.

3. (Original) The incubator of claim 2, wherein said receptacle mixing mechanism comprises:

a motor;

a shaft operatively coupled to said motor, at least a portion of said shaft extending into said housing; and

a disk mounted on the portion of said shaft disposed within said housing, said disk mounted in such a manner that the plane of the disk is disposed at an acute angle with respect to the longitudinal axis of said shaft.

4. (Previously presented) The incubator of claim 1, wherein said door is mounted to said housing so as to be rotatable with respect thereto, and wherein movement of said door between said closed position and said open position is effected by rotation of said door.

5. (Currently Amended) The incubator of claim 4, wherein said ~~command-responsive~~ closure mechanism further comprises a motor operatively coupled to said door for effecting powered rotation of said door.

6. (Cancelled)

7. (Original) The incubator of claim 5, wherein said door comprises:
an arcuate closure panel;
a hinge plate extending transversely from an end of said closure panel, said hinge plate being rotatably secured relative to said housing; and
a lower actuating plate extending transversely from an opposite end of said closure panel, said lower actuating plate being coupled to said motor for transferring powered rotation of a shaft of said motor to rotation of said closure panel.

8. (Original) The incubator of claim 1, wherein said heat source comprises electrically-resistive heating coils secured to one or more surfaces of said housing.

9. (Original) The incubator of claim 1, further comprising a heat sensor constructed and arranged to measure the temperature within said incubation chamber.

10. (Original) The incubator of claim 1, wherein said housing includes one or more openings formed therein to permit access to a reaction receptacle carried in said housing to allow fluid transfer to or from said reaction receptacle while said reaction receptacle is carried in said housing.

11. (Original) The incubator of claim 1, wherein said receptacle carrier comprises a carousel rotatably mounted within said housing and constructed and arranged to carry a reaction receptacle in each of said receptacle stations, said receptacle stations being arranged circumferentially about said carousel.

12. (Original) The incubator of claim 11, further comprising a position encoder operatively coupled to said carousel and constructed and arranged to indicate a rotational position of said carousel.

13. (Original) The incubator of claim 11, wherein each of said receptacle stations is elongated in a radial direction with respect to said carousel to accommodate an elongated reaction receptacle and to carry the reaction receptacle supported in a radial orientation.

14. (Original) The incubator of claim 11, further comprising shelves disposed along opposite sides of each of said receptacle stations for supporting a projecting rib structure disposed on opposite sides of a reaction receptacle carried therein.

15. (Original) The incubator of claim 11, further comprising:
a pulley wheel coaxially mounted to said carousel;
a motor mounted to said housing and having an output shaft; and
a belt trained around said pulley wheel and said output shaft for transferring powered rotation of said output shaft to said pulley wheel.

16. (Original) The incubator of claim 1, said receptacle carrier further comprising one or more reaction receptacle sensors disposed with respect to each of said receptacle stations to sense the presence of a reaction receptacle in said receptacle station.

17. (Currently Amended) The incubator of claim 1, wherein said housing is generally cylindrical in shape and includes a generally circular ~~lid~~ cover.

18. (Original) The incubator of claim 17, wherein said housing is formed from aluminum.

19. (Original) The incubator of claim 1, further comprising feet supporting said housing, said feet being formed from material that is a poor thermal conductor.

20. (Original) The incubator of claim 1, further comprising thermal insulation substantially covering said housing.

21. (Previously presented) The incubator of claim 31, wherein said powered fan mechanism comprises a motorized centrifugal fan located in a central portion of said incubation chamber.

22. (Original) The incubator of claim 1, further comprising a receptacle bridge extending outwardly from said housing from a location below said receptacle access opening for

supporting a bottom surface of a reaction receptacle being transferred through said receptacle access opening.

23. (Currently amended) The incubator of claim 1, further comprising
a second receptacle access opening formed in said housing for allowing movement of a reaction receptacle into or out of said housing through said second receptacle access opening; and
a second ~~command-responsive~~ closure mechanism connected to said housing in proximal relation to said second receptacle access opening, said second ~~command-responsive~~ closure mechanism being constructed and arranged to be movable between a closed position and an open position with respect to said second receptacle access opening in response to corresponding closure movement commands from the computer controller to prevent or permit access to said housing through said second access opening.

24-30. (Cancelled)

31. (Previously presented) The incubator of claim 1, further comprising a powered fan mechanism disposed within said incubation chamber and constructed and arranged to generate air movement within said incubation chamber to promote a generally uniform temperature distribution internal to said incubation chamber.

32. (Previously presented) The incubator of claim 31, further comprising a receptacle mixing mechanism mounted on said housing and constructed and arranged to agitate a reaction receptacle carried in a one of said receptacle stations disposed in an operative position with respect to said mixing mechanism to thereby mix a reaction fluid contained in the reaction receptacle.

33. (Previously presented) The incubator of claim 32, wherein said receptacle mixing mechanism comprises:

a motor;

a shaft operatively coupled to said motor, at least a portion of said shaft extending into said housing; and

a disk mounted on the portion of said shaft disposed within said housing, said disk mounted in such a manner that the plane of the disk is disposed at an acute angle with respect to the longitudinal axis of said shaft.

34. (New) The incubator of claim 4, wherein said door comprises a cylinder with a slot extending therethrough.